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Case Report

Transvenous Valve-in-Valve Replacement Preserving the Function of a Transvalvular Defibrillator Lead

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Although feasibility and efficacy of percutaneous tricuspid valve-in-valve implantation have been established, a transtricuspid pacing or defibrillator lead might preclude this technique: lead damage can cause lead dysfunction resulting in inappropriate or inefficient pacing or shocks. In these cases, lead removal is thought to be the only option. We describe a patient who presented with rapid clinical deterioration due to tricuspid valve stenosis early after implantation of an internal defibrillator with a transvalvular shock-lead. A transvenous valve-in-valve implantation of the tricuspid valve was performed after protecting the defibrillator-lead with a custom-made covered stent. We describe the technical issues, the clinical outcome, and the evolution of lead function after implantation. © 2014 Wiley Periodicals, Inc.

Key words: tricuspid valve; percutaneous intervention; internal cardiac defibrillator; lead protection

INTRODUCTION

In patients at high risk for cardiac surgery, feasibility and efficacy of percutaneous tricuspid valve-in-valve implantation have been established [1–3]. However, patients with a transtricuspid pacing or defibrillator lead challenge the interventional cardiologist with a dilemma: the valved stent can damage the lead causing dysfunction, inadequate sensing or pacing, which in turn may result in delivering inappropriate or inefficient shocks [4,5].

We describe a patient who presented with symptomatic tricuspid valve stenosis after implantation of a transvalvular shock-lead. A transvenous valve-in-valve implantation of the tricuspid valve was performed after protecting the defibrillator lead with a covered stent.

CASE REPORT

A 42-year-old male presented for percutaneous revalvulation of the tricuspid valve. He was born with an arterial trunc, underwent pulmonary artery banding in infancy, and was repaired at the age of five. Later, multiple re-interventions were needed. At the age of 29 years, right ventricular outflow tract reconstruction with a Carpentier-Edwards size 27 mm bioprosthesis, as well as implantation of a tricuspid valve Carpentier-Edwards size 33 mm bioprosthesis was performed. Symptomatic runs of ventricular tachycardia at the age of 40 years were treated with an internal defibrillator (ICD) Medtronic Virtuoso® VR connected to a 9 Fr transvalvular shock lead (Medtronic 6947).

In the years following ICD implantation, tricuspid valve stenosis developed with rapid clinical deterioration in 2 years. He presented now in NYHA functional class IV with severe right heart failure and anasarc edema.

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